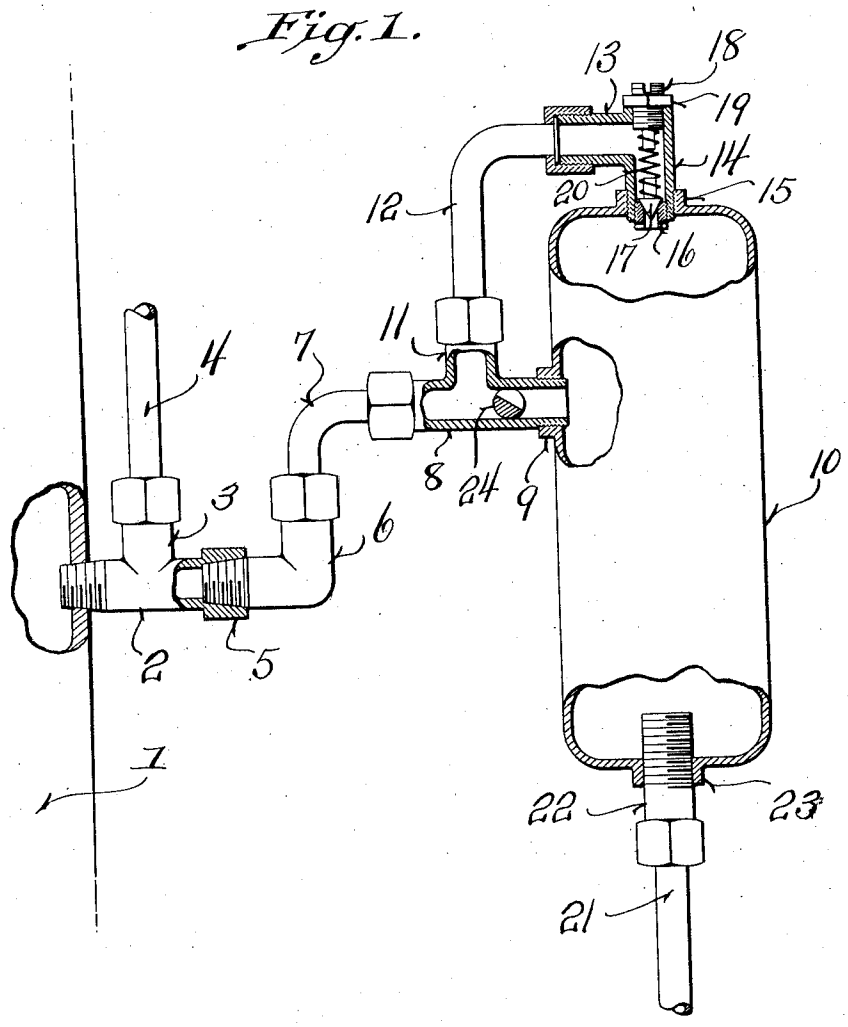
March 29, 1927. 1,622,811

E. R. SCHATZ

AIR INLET DEVICE FOR MANIFOLDS

Filed June 5, 1925

Fig. 1.



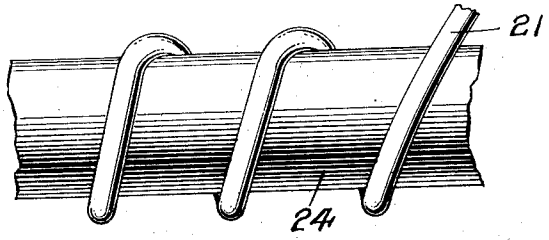


Fig. 2.

Inventor:
Ernest R. Schatz
By
Attorneys

Patented Mar. 29, 1927. 1,622,811

UNITED STATES PATENT OFFICE.

ERNEST R. SCHATZ, OF RACINE, WISCONSIN.

AIR-INLET DEVICE FOR MANIFOLDS.

Application filed June 5, 1925. Serial No. 35,140.

This invention relates to air inlet devices for manifolds.

Objects of this invention are to provide an attachment for intake manifolds for internal combustion engines which is so constructed that it is adapted for supplying heated air to the manifold in the exact proportion required for securing the most effective mixture for the particular grade of fuel used, and for the particular condition under which the engine is operating.

Further objects are to provide a device in which the normal supply for the engine under low speed may be manually regulated to the exact demands of the engine, and in which an auxiliary valve is adapted to open and supply an additional amount of heated air for high engine speeds.

An additional object of this invention is to provide an attachment which is so constructed that it may be positioned at any one of several different places with reference to the intake manifold to thus adapt the device to any make of car and will accommodate itself to the available space adjacent the intake manifold.

An embodiment of the invention is shown in the accompanying drawings, in which,

Figure 1 is a view of the attachment connected to an intake manifold, and showing it partly in section to illustrate the construction more fully.

Figure 2 is a fragmentary view of a portion of the exhaust pipe and the heating pipe.

In practising this invention the intake manifold 1 is provided with a tapped hole within which the threaded end of a fitting 2 is screwed. This fitting is a straight fitting or nipple-like member if it is applied to an engine which is not equipped with a vacuum tank, but if a vacuum tank is employed, the fitting, as shown in the drawing, is of T-shape. One arm 3 of the fitting receives the small pipe 4 leading to the vacuum tank. The other arm 5 of the fitting receives the threaded end of an L-shaped fitting 6. This fitting receives one end of a pipe 7 provided with a right angle bend, the other end of such pipe being connected to a T-shaped pipe 8. The T-shaped pipe in turn is screwed into a threaded boss 9 formed in a small tank 10. An upwardly extending arm 11 projects from the fitting 8 and receives the angularly bent pipe 12 whose upper end is connected with the outwardly projecting arm 13 of an L-shaped member, the vertical arm 14 of such member being screwed into an upper threaded boss 15 of the tank 10.

The member 14 is internally threaded at opposite ends and its lower end receives the valve seat 16 which is screwed therein, and which cooperates with the valve 17. The upper end of the member 14 receives the adjusting plug 18 which is locked in place by means of the nut 19. The plug 18 and the valve 17 are provided with inwardly projecting members which receive opposite ends of the compression spring 20, such compression spring controlling the seating of the valve. Obviously, from this construction, the exact pressure exerted by the spring 20 may be regulated by the plug 18.

A small pipe 21 is connected by means of a fitting 22 with a lower threaded boss 23 of the tank 10. It is intended that the pipe 21 shall extend to any heated portion of the engine, for example it may be wrapped around or placed adjacent the exhaust manifold.

A further adjustment is provided by means of the manually controlled valve 24 positioned within the fitting 8, as illustrated in the figure and controlling direct communication between the tank 10 and the inlet manifold 1.

It is to be noted that the pipe 22 projects upwardly a distance below the lower end of the tank 10 and thus provides a space around such pipe for settling of dust or other material which may be drawn in through the pipe 21.

If desired, the tank 10 may be positioned adjacent a heated portion of the engine. It is to be particularly noted that the construction of fittings 2 and 6 together with the pipe 7 is such that the tank 10 may be rocked into any desired position, by suitably rotating the members. For example the fitting 6 or elbow may be turned into a horizontal position and the tank 10 adjusted with relation to the pipe 7 to thus lower the tank. Further, if it is found desirable the pipe 7 may be rotated within the fitting 6 to thus position the tank towards or away from the engine.

It will be seen, therefore, that a multitude of adjustments of the tank 10 are provided by this construction allowing it to be positioned at the most desirable place for the particular engine to which it is connected.

In operation, the valve 24 is adjusted for the most efficient operation of the engine at low speeds. At higher speeds the valve 17 opens and an additional supply of air passes into the intake manifold. All of the air passing into the tank 10 is heated prior to passing into the manifold either by being heated within the pipe 21 or within the tank 10 or by both methods. For example, the tank 1 may be located closely adjacent the engine or exhaust manifold so that it will become heated or else the pipe 21 may be wrapped about the exhaust pipe 24 as shown in Figure 2. Both of these expedients may be used if desired.

This device will improve the operation of the engine and may be adjusted to the exact conditions under which it is to operate.

It is to be noted that the tank 10 is relatively large in comparison to the pipe 21 and to the delivery pipes; thus the tank 10 operates to smooth out pulsations in the suction and allows a more uniform response under varying conditions. Further, the tank 10 allows the incoming heated air to travel at a very much lower rate than to the pipe 21 and consequently allows the settling out of solid materials which might be drawn in through the pipe 21.

Although the invention has been described in considerable detail, it is to be understood that the invention may be variously embodied and is, therefore, to be limited only as claimed.

I claim:

1. The combination of an intake manifold of an internal combustion engine, of an air heating device comprising a tank, a pipe leading directly from said tank to said intake manifold, a valve interposed between said tank and said intake manifold and adapted to be manually controlled, a pipe connecting said tank and said first mentioned pipe at a point between said valve and said intake manifold, a spring urged valve controlling communication from said tank to said manifold through said second mentioned pipe and a supply pipe opening into said tank.

2. A device for attachment to the intake manifold of an internal combustion engine comprising a tank having a delivery pipe extending therefrom, a manually controlled valve located within said pipe adjacent said tank, said tank having a bypass connected to said pipe outside of said valve, a yieldingly urged valve controlling the flow through said bypass and a pipe connected to said tank and adapted to be positioned adjacent a heated portion of the engine.

In testimony that I claim the foregoing I have hereunto set my hand at Racine, in the county of Racine and State of Wisconsin.

ERNEST R. SCHATZ.